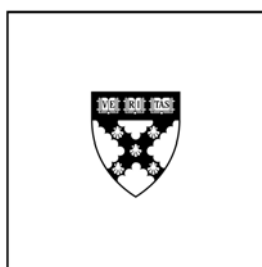


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# **The Consequences of Mandatory Corporate Sustainability Reporting**

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# The Consequences of Mandatory Corporate Sustainability Reporting

## Abstract

We examine the effect of mandatory sustainability reporting on several measures of socially responsible management practices. Using data for 58 countries, we show that after the adoption of mandatory sustainability reporting laws and regulations, the social responsibility of business leaders increases. We also document that both sustainable development and employee training become a higher priority for companies, and that corporate governance improves. Furthermore, we find that companies implement more ethical practices, reduce bribery and corruption, and that managerial credibility increases. These effects are larger for countries with stronger law enforcement and more widespread assurance of sustainability reports. We confirm these findings using firm-level environmental, social and governance metrics and a differences-in-differences research design.

*Keywords: sustainability reporting, mandatory reporting, corporate sustainability, corporate social responsibility*

## I. Introduction

In the last decade, reporting of nonfinancial information has become widespread. According to the Global Reporting Initiative (GRI), only 44 firms followed GRI guidelines to report sustainability information<sup>1</sup> in 2000 yet by 2010, the number of organizations releasing sustainability reports, predominantly on a voluntary basis, grew to 1,973.<sup>2</sup> Concurrently, national governments and stock exchange authorities have further promoted sustainability reporting by adopting laws and regulations that specifically mandate such reporting. In this paper, we focus on investigating whether mandatory disclosure of sustainability information actually has significant consequences on managerial practices. For the purposes of this study we term a “sustainability report” as a firm-issued general purpose non-financial report, providing information to investors, stakeholders (e.g., employees, customers and NGOs), and the general public about the firm’s activities involving environmental, social, and governance (ESG) issues, either as a stand-alone report or as part of an integrated<sup>3</sup> (e.g. financial and sustainability) report.

Concerns around the environmental impact, social responsibility, and governance of corporations have been on the rise for the past twenty years. In response, a growing number of regulators around the world are reviewing the governance arrangements of corporations to ensure that corporate conduct is aligned with society’s interests. Corporate reporting is one aspect of the governance structure that regulators are considering to change, with momentum being created behind either mandatory sustainability reporting (consider for example, the revision of Danish Financial Statements Act in Denmark and the guidelines for external reporting by state-owned companies in Sweden) or mandatory integrated reporting (consider here the Grenelle II Act in France and the King Code III in South Africa).

To better understand whether mandatory sustainability reporting affects firm actions we collect data on laws and regulations that mandate a minimum level of disclosure on environmental, social, and

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<sup>1</sup>The terms “sustainability”, “environmental, social and governance” (ESG), “non-financial” or “corporate social responsibility” (CSR) reporting have been used interchangeably in the past, to describe reports with different degrees of focus on environmental, social or governance issues.

<sup>2</sup>For a complete listing of these organizations see <http://www.globalreporting.org/ReportServices/GRIReportsList/>.

<sup>3</sup>An integrated report is a single document that presents and explains a company’s financial and non-financial—environmental, social, and governance—performance (Eccles and Krzus, 2010).

governance matters. We comprehensively search a plethora of resources and we code the year of enactment for the law(s) and regulation(s) we identify in each country. The data on socially responsible management practices<sup>4</sup> come from the IMD World Competitiveness Report.<sup>5</sup> To isolate the effect of mandatory reporting, we control for the level of economic development, the quality of living standards, the quality of governmental decisions in each country-year pair, and for year fixed effects. In addition, we include the lagged value of the dependent variable to account for all unobservable factors that affect the dependent variable prior to the enactment of the law or regulation. This way, we control for all unobserved historical factors that influence the level of the dependent variable before the enactment of the law in the focal country (Wooldridge, 2002).

The results show that mandatory sustainability reporting effectively promotes socially responsible managerial practices. In particular, after the enactment of mandatory disclosure laws and regulations, perceptions regarding the social responsibility of business leaders improve. Moreover, we examine the impact on the three pillars of corporate social responsibility: environment, society, and governance. We find that after the enactment of mandatory disclosure employee training becomes a higher priority for companies (social pillar), and corporate boards supervise management more effectively (governance pillar). We also find directionally consistent but insignificant results for the prioritization of sustainable development by firms (environmental pillar). We also investigate the effect that sustainability reporting has on the implementation of ethical practices by businesses and on bribery and corruption, which is one fundamental aspect of ethical dealings within and across organizations. We find that corporations implement more ethical practices, and directionally consistent but insignificant results that corruption decreases after the enactment of mandatory disclosure laws and regulations.

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<sup>4</sup> We use the term socially responsible management practices to describe management practices that promote the environmental, social and governance performance of corporations and an ethical way of doing business. A formal definition of all variables can be found in Appendix 1.

<sup>5</sup> This database has been used in many papers examining a wide range of issues at the country-level (e.g. Alesina and Weder, 2002; Swift and Zadek, 2002; Brunetti and Weder, 2003; Di Tella and MacCulloch, 2005; Richardson, 2006; Ioannou and Serafeim, 2011; Healy et al., 2011).

The subsequent analysis tests whether managerial credibility increases after mandatory sustainability reporting. This may be the result of companies showing a heightened socially responsible behavior by treating employees and the environment with prudence and implementing ethical practices across their operations and supply chains. An increase in managerial credibility is a necessary element in forging a relationship of trust between business and society, which in turn is an important determinant of the competitiveness and economic development of nations (Knack and Keefer, 1997). We find strong results that managerial credibility increases following the year of mandatory sustainability reporting.

Consistent with past literature that emphasizes the importance of enforcement (La Porta, Lopez-de-Silanes, and Shleifer, 2006; Hail and Leuz, 2006), we find that the strength of the enforcement of government decisions moderates the effects of mandatory disclosure. Specifically, after the enactment of sustainability reporting, the social responsibility of business leaders increases and sustainable development becomes a higher priority relatively more for countries with stronger enforcement capabilities. The same holds true for investments in employee training, implementation of ethical practices, and reductions in bribery and corruption. Moreover, we find these positive effects to be stronger for countries where assurance of sustainability reports is more widespread. In particular, the effect on social responsibility, sustainable development, employee training, efficient supervision of managers by corporate boards, and bribery and corruption, is higher in countries where assurance is more frequent.

Finally, we conduct a series of additional tests to assess the robustness of our results. First, we use an instrumental variables estimation strategy and find that the results are robust to this alternative identification methodology. Second, we show that the results apply to both developed and developing economies, albeit with higher significance in developed countries. Interestingly, the two dependent variables of interest that are not significantly influenced for developed countries - sustainable development and ethical practices - are those that are affected by the enactment of mandatory disclosure in developing economies. This finding is consistent with prior work on sustainable development that underscores the importance that such policies have particularly in developing countries (e.g. Markandya and Halsnaes, 2002). Third, we show that the results are robust when we include control variables for the

development of voluntary guidelines or standards for sustainability reporting, or for laws and regulations that mandate disclosure about a narrow environmental, social, or governance topic. Fourth, we find similar results when we analyze firm-level ESG data. Using a differences-in-differences research design, where the control group comprises of firms that disclosed their ESG performance before the regulation, we find that energy, waste and water consumption decline and investments in employee training increase for firms that first disclosed their ESG performance after the enactment of the regulation. These results mitigate concerns that the effects we document here are driven by changes in the managers' own perceptions rather than changes in firm conduct or by changes in other country-level regulations.

The results of this paper contribute to the literature, to managerial practice and to policy making in several ways. First, to our knowledge, this study is the first to show that mandatory sustainability reporting may effectively promote socially responsible management practices. These findings could also be economically important because socially responsible managerial practices may enhance the competitiveness of a country by generating higher levels of trust in business and its leaders (European Commission, 2008; King Code of Governance Principles for South Africa, 2009). This has important implications for regulators and policy makers who have already mandated or are considering mandating sustainability or integrated reporting. For example, the European Union has consistently emphasized the importance of sustainable development and building trust between business and society to increase European competitiveness (European Commission 2001, 2005, 2006). Finally, the results suggest that managers may use reporting as a tool for building better and more effective communication channels between the firm and its stakeholders by making the firm more transparent and more accessible. Developing a reputation for responsible corporate behavior may also result in competitive advantages in labor, product, and capital markets and/or may secure the license to operate by establishing social legitimacy (e.g. Godfrey, 2005; Margolis and Walsh, 2003; Hawn, Chatterji and Mitchell, 2011).

The remainder of the paper is organized as follows. Section II discusses the motivation for this study and describes the history of sustainability reporting to date. Section III develops the hypotheses. Section

IV presents the data sources and sample. Section V discusses the research design. Section VI presents the results and section VII concludes.

## **II. Background and Motivation**

Various ways exist to promote sustainability reporting. One option is for the regulator to be passive and let sustainability reporting emerge as the result of market forces. Alternatively, the regulator may choose to introduce a range of measures to supplement the market forces: a) through regulations dictating mandatory reporting by firms; b) by providing incentives for companies to report; c) governmental endorsement of the GRI Guidelines<sup>6</sup> and material encouragement for adoption; d) by recommending or proposing voluntary guidelines with or without reference to international standards such as the United Nations Global Compact (UNGC) and GRI; or e) by transferring the regulatory power to self-regulating authorities like a stock exchange, whose statutes may be either voluntary or mandatory. Across countries, different combinations of the above options have been implemented in recent years. However, the general consensus is that corporate disclosure on sustainability issues remains poor.

Sustainability reporting was driven, both in the US and in Europe in the 1960s and 1970s, by a renewed awareness of external responsibilities unfulfilled by governmental institutions, and ones that were directly attributable to business organizations. Early experiments with social reporting, primarily in the Netherlands and France, paved the way for the introduction of environmental reports in countries such as Germany, Austria, and Switzerland. During the 1980s, ethical investment funds in the UK and the US implemented an investment approach - broadly known as “negative screening” - that excluded firms from their investment universe based on their social and ethical performance. Originally applying religious principles, such funds excluded firms operating in the alcohol or tobacco industries. Following the 1989 Exxon Valdez disaster, the US-based Coalition for Environmentally Responsible Economies (CERES) developed The “CERES/Valdez Principles” on behalf of the Social Investment Forum (SIF), introducing a set of environmental reporting guidelines.

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<sup>6</sup> See <http://www.globalreporting.org/ReportingFramework/G3Guidelines/>

The 1990s saw increased levels of reporting with coverage becoming more comprehensive, through the search for new financial metrics (e.g. Rappaport, 1998; Stewart, 1999), as well as the development of other non-financial measures of firm value (e.g. Kaplan and Norton, 1992; Sveiby, 1997). This trend was best showcased by innovative and pioneering disclosures of firms such as the Body Shop International's first Values Report<sup>7</sup> (1995) in which the firm reported on environmental, animal protection and social issues. In 1997, CERES and the United Nations Environment Program (UNEP) launched the GRI to develop reporting guidelines for the "triple bottom line:" economic, environmental and social performance. The aim was to elevate sustainability reporting to the same level and rigor as financial reporting. Consequently, the 1990s witnessed a growth in voluntary corporate sustainability reports.

In more recent years, growing social (e.g., poverty, deteriorating social equality, and corruption) and environmental (e.g., climate change, water usage, and waste) concerns have pressured companies towards a more systematic treatment of sustainability reporting, disclosing how they are utilizing, developing (or depleting) and more generally affecting human capital and natural resources. Moreover, as a result of several high-profile corporate scandals and the recent global financial crisis, there has been a general feeling of distrust regarding companies' ability to self-regulate (Edelman Trust Barometer, 2009) and a belief that existing company disclosures tell an incomplete story regarding past corporate performance and future prospects (e.g. Kaplan and Norton, 1992; Simnett, Vanstraelen and Chua, 2009). A broader set of stakeholders, including the investment community, is now demanding a more active and substantive role by governments in the sustainability reporting field. In parallel, information intermediaries in capital markets, such as sell-side analysts, increasingly integrate ESG data in their valuation models, creating more demand for sustainability reporting (Ioannou and Serafeim, 2010).

Another significant development has been the launch of the sustainable stock exchanges initiative by the United Nations Principles for Responsible Investment (UNPRI). The initiative aims to explore how exchanges can work together with investors, regulators, and companies to enhance corporate transparency and ultimately, performance on ESG issues and to encourage responsible long-term approaches to

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<sup>7</sup> See: <http://www.independent.co.uk/news/business/stakeout-at-the-body-shop-1324992.html>



investment. In January 2011, investors (belonging to the UNPRI) representing \$1.6 trillion in assets under management, sent a letter to the top 30 stock exchanges asking them to encourage better internal corporate governance by firms, and disclosure of how sustainability issues are addressed at the board level. Investors also asked the stock exchanges to consult with firms on how to integrate sustainability into strategic decision-making and to encourage firms to adopt integrated reporting.<sup>8</sup>

In 2009, the European Commission hosted a series of multi-stakeholder workshops on ESG disclosure, culminating in a debate on a series of hypothetical scenarios, including some regulatory options, for the future of European policy on this issue. In South Africa regulators moved decisively towards mandating integrated reporting, with the issuance of the King III Report on Corporate Governance. This report was preceded by the issuance of the King Report on Corporate Governance in 1994, and by the King Report on Corporate Governance for South Africa in 2002. Finally, in the US, the Securities and Exchange Commission (SEC) issued the ‘Guidance Regarding Disclosure related to Climate Change’ in February 2010 to clarify the existing rules by requiring companies to disclose material risks relating to climate change. Following the Gulf of Mexico oil spill in April 2010, the US government raised expectations for regulation on mandatory ESG disclosure (Ciurea, 2010). In June 2010, the SIF asked the SEC for mandatory ESG reporting based on the GRI reporting guidelines.

### **III. Hypotheses Development**

Sustainability reporting may have two effects. First, reporting can increase transparency around the social and environmental impact of companies and around their governance structure. Second, reporting can change internal management practices by creating incentives for companies to better manage their relationships with employees, investors, customers, suppliers, regulators, and civil society. For this second effect to take place it is necessary that the first effect is substantial and that transparency of the firm’s ESG performance increases. Reporting of sustainability-related issues may shed light on both opportunities and risks that the firm is facing, but which might not have been revealed otherwise. Examples would include opportunities for increased efficiency through water and/or energy management,

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<sup>8</sup>See <http://www.unpri.org/files/SSE%20Letters%20to%20exchanges%20-%20public%20version.pdf>

managing reputational risks within the supply chain due to the prevention of human rights violations, or identifying undetected bribery and corruption activities. In other words, extensive disclosure may lead to increased transparency on ESG issues, which contributes towards a better understanding of how sustainability is linked to economic value, and a consequent change in corporate behavior towards ESG matters. Garz and Volk (2007) studied sustainability reporting by 540 European firms and found that the process of drafting such a report itself was among the most important catalysts for organizational change, contributing to the accumulation of knowledge, questioning of processes, and the establishment of suitable structures and practices.

Although voluntary disclosure may have firm-specific consequences, mandatory sustainability reporting has the potential to generate positive systemic effects at the level of society. In particular, forcing most companies in a country to disclose their ESG performance has the potential to systematically influence managerial practices across all companies in the focal country. Mandating sustainability reporting also constitutes a strong signal, sent from regulators to the business community, about the long-term goals and objectives of the country as whole. For example, South African regulators, by adopting the King Code of Governance Principles for South Africa (2009) highlighted the importance of a need for a fundamental shift in the way managers and directors act.

For the above reasons, we expect that mandating sustainability reporting will change managerial practices and increase the social responsibility of business leaders. Corporate social responsibility is built upon three foundational pillars: environmental, social and governance. Consequently, we predict that mandating sustainability reporting will increase the extent to which sustainable development is a priority for companies (environmental pillar). Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations to come.<sup>9</sup> Efficient and prudent use of resources by corporations reduces the likelihood of higher costs in the future through tax mechanisms, and secures a corporation's license to

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<sup>9</sup> The term was used by the Brundtland Commission which coined what has become the most dominant definition of sustainable development as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”.

operate. In addition, we expect that firms will increase investments in human capital in the form of employee training as a result of a renewed focus on responsibly managing human capital (social pillar). Human capital has received increased attention in the last two decades with companies, investors and regulators increasingly recognizing its importance for economic development, and the United Nations establishing the Human Development Index. On the governance pillar, we expect that boards of directors will function more effectively, by considering a broader set of issues that the corporations need to address to be sustainable in the long-term. Effective supervision of management by the board could also be facilitated by directors getting more and better information on social and environmental issues.

We also predict that businesses will implement more ethical practices and will compete in a more ethical way, resisting bribery and corrupt practices. Corruption is recognized to be one of the world's greatest challenges. It is a major obstacle to sustainable development and is corrosive on the very fabric of society (UNGC, 2010). The impact of corruption on the private sector is also considerable. Corruption impedes economic growth, distorts competition and represents serious legal and reputational risks (Transparency International, 2009).

Finally, and as a consequence of all the above effects, we expect managerial credibility to increase. Managers that behave in a socially responsible way will be able to build social capital and gain society's trust in business. Moreover, responsible managers will be able to build long-term relationships within their supply chains, ensuring the sustainability not only of their own firms, but also of the ecosystem in which their firms are embedded. In addition, socially responsible behavior may lead to a better relationship of corporations with government agencies thus further enhancing managerial credibility within society. Sustainability reporting may also help strengthen the relationship between corporations and local communities by revealing the contribution of firms to the development of such communities; information that might not have been otherwise accessible by social actors. Disclosure of such information in turn, highlights the role that managers play in their local communities, and increases the trust and credibility with which managers are regarded. We summarize all the predictions made above in the following hypothesis:

*Hypothesis 1: After the enactment of mandatory sustainability reporting, corporations implement more socially responsible management practices.*

However, we note that it is possible that mandatory sustainability reporting is less effective than voluntary reporting. If regulators impose a number of required disclosures, companies may simply focus on meeting these requirements rather than considering core issues that are more material to their business in a more sophisticated or strategic way. Moreover, forcing companies to produce sustainability reports disrupts a separating equilibrium between companies that do not report vs. companies that do report and creates a pooling equilibrium where all firms report (Spence, 1973; Verrecchia, 1983). This could impair the signaling value of sustainability reports and impede all stakeholders' ability to distinguish between firms.

#### *The Role of Enforcement*

Countries around the world are not homogenous in how they enact and enforce laws and regulations. Considerable variation exists across several dimensions that may influence the impact of mandatory disclosure laws and regulations. First, countries differ in terms of the mechanisms that they have in place to enforce laws and regulations. In fact, prior literature has documented that a variety of enforcement mechanisms exist and this variation leads to a differential impact of such laws and regulations on society (La Porta, Lopez-de-Silanes, and Shleifer, 2006). We expect that in countries with relatively weak enforcement processes, laws and regulations will have a more limited impact because firms are less likely to comply. Therefore, we argue that mandatory sustainability reporting will have a stronger impact on socially responsible management practices in countries where laws and regulations are more effectively enforced.

*Hypothesis 2: After the enactment of mandatory sustainability reporting, corporations implement more socially responsible management practices in countries with stronger law enforcement.*

#### *The Role of Assurance*

Furthermore, countries vary with regards to the extent to which third parties provide reporting assurance. Financial statements are always accompanied by an audit statement from a third party, providing

certification of the reported financial numbers. Moreover, in contrast to sustainability reports, financial statements can be audited only by regulated entities that have been certified and given the right to audit and sign financial statements. Third party assurance is considered an important element of the corporate reporting function and the broader corporate governance domain since it increases the credibility of the reported numbers; more credibility, in turn, determines the level of trust that stakeholders place on managerial disclosure. In addition, assurance of sustainability data is voluntary and there are no universally accepted auditing principles to guide the certification process of a sustainability report.<sup>10</sup>

Whether sustainability data are assured then, depends on the demand and supply forces for assurance in the market (Simnett, Vanstraelen and Chua, 2009). From a signaling perspective (Spence, 1973), firms may seek assurance of their sustainability reports to credibly distinguish themselves from peers that might engage in “green-washing” or symbolic compliance with the law, thus reducing asymmetric information and/or agency costs (Simnett, Vanstraelen and Chua, 2009). Other factors that may influence the firm’s decision to seek third party assurance include the cost of assurance, and the ability and availability of accounting and consulting firms to audit sustainability data.<sup>11</sup>

Consequently, expanded assurance by third parties after the enactment of mandatory reporting laws will result in more credible sustainability reports. Additionally, during the assurance engagement process, assurers can provide valuable insights on the robustness of management systems and practices, target-setting procedures, and data collection mechanisms, thus improving both the way a company manages sustainability related issues and the associated disclosure (Corporate Register, 2008). Therefore, we

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<sup>10</sup> The AA1000 Assurance Standard (AA1000 AS) is a standard for assessing and strengthening the credibility and quality of an organization’s social, economic and environmental reporting. AA1000 AS was created by the not-for-profit professional institute, AccountAbility, which offers assurance-related services to its members through working in partnership. International Standard on Assurance Engagements (ISAE 100) was designed to provide a basic framework for large scale audits concerned with non-financial data process monitoring. These types of audits include environmental, social and sustainability reports; auditing of information systems, internal control, and corporate governance processes; and compliance audits for grant conditions, contracts and regulations. Three years later, to clarify the definition of "moderate assurance engagements," ISAE 3000 was established to further address ethical requirements; quality control; engagement acceptance; planning; expert materials; obtaining evidence; documentation; and preparing assurance reports.

<sup>11</sup> A certification can be a statement of reasonable or limited assurance. The evidence-gathering procedures for limited assurance are more restricted than for reasonable assurance.

expect that mandatory reporting laws will have a stronger impact in countries where sustainability reports are more frequently assured.

*Hypothesis 3: After the enactment of mandatory sustainability reporting, corporations implement more socially responsible management practices in countries where a higher percentage of sustainability reports are assured.*

#### **IV. Data and Sample**

We collected data on laws and regulations that mandate sustainability reporting in three stages. First, we collected country-level laws and regulations that mandate some type of environmental, social, and/or governance disclosure. The most useful resources to locate these laws and regulations were local or regional websites that describe sustainability reporting in each country. We also examined relevant publications that collect data on reporting laws and regulations around the world. These included the *Carrots and Sticks for Starters – Current Trends and Approaches in Voluntary and Mandatory Standards for Sustainability Reporting* report prepared by KPMG and the UNEP, the *Carrots and Sticks – Promoting Transparency and Sustainability* report prepared by KPMG, the Unit for Corporate Governance in Africa, the GRI, the UNEP, and the book *The World Guide to CSR: A Country-by-Country Analysis of Corporate Sustainability and Responsibility*. For some countries, the websites of the national government and/or the legislative branch, and/or the national stock exchange, also proved valuable resources for reading about and accurately classifying the relevant laws and regulations. In stage two, the authors jointly reviewed each of the candidate laws and regulations on that list to confirm that the law or regulation mandated reporting of corporate sustainability data and to verify the year in which it was enacted. In stage three, for cases where the law or regulation was not clear about the reporting requirements, we reviewed actual disclosures from companies domiciled in the country that the law or regulation was enacted to ensure that it had an effect on reporting practices. After this third stage, we arrived at the final list of laws and regulations. The first country to adopt a mandatory sustainability reporting law in the sample is Finland, in 1997. Other countries that adopted a law in the sample are: Australia, Austria, Canada, China, Denmark, France, Germany, Greece, Indonesia, Italy, Malaysia,

Netherlands, Norway, Portugal, Sweden and the United Kingdom. Appendix 2 shows all mandatory and voluntary reporting guidelines around ESG issues that we were able to find.

We collected other country-level data from the IMD World Competitiveness Yearbook (WCY)<sup>12</sup>, which analyzes and ranks the ability of nations to create and maintain an environment that sustains the competitiveness of enterprises. The yearbook benchmarks the performance of 58 countries based on more than 300 criteria measuring different facets of competitiveness. Approximately two thirds of the data come from statistical databases (international/national sources) and the remaining third from surveys (Executive Opinion Survey). Statistical indicators are acquired from international, national and regional organizations, private institutions and a network of 54 partner institutes worldwide.

Whereas the statistical indicators show how competitiveness is measured over a specific period of time, the survey data measure competitiveness as it is perceived within society. The survey is designed to quantify issues that are not easily measurable, such as management practices, labor relations, corruption, environmental concerns, and quality of life. The survey responses reflect perceptions of competitiveness by business executives who are dealing with international business situations. The Executive Opinion Survey is sent to executives in top and middle management positions in all of the economies covered by the WCY. The surveys are sent in January and are returned in April. In order to be statistically representative, IMD selects a sample size that is proportional to the GDP of each economy. The sample of respondents is representative of the entire economy, covering a cross-section of the business community in each economic sector: primary, manufacturing, and services, based on their contribution to the GDP of the economy. The survey respondents are nationals or expatriates, located in local and foreign enterprises in the country and which in general, also have an international operating dimension. They are asked to evaluate the present and expected competitiveness conditions of the economy in which they operate and

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<sup>12</sup> The sample includes the following countries: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Korea, Lithuania, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, Ukraine, United Kingdom, United States, and Venezuela. For more information, see <http://www.imd.org/research/publications/wcy/index.cfm>

have resided during the previous year, drawing from their extensive international experience, thereby ensuring that the evaluations portray an in-depth knowledge of their particular environment.

Finally, we collected data on assurance practices from the GRI.<sup>13</sup> Out of all companies that publish sustainability reports as of 2008<sup>14</sup> we counted the number of reports that have been assured by a third party. This number represents a proxy for the level of corporate commitment to sustainability because we expect that companies spending more time addressing sustainability risks and opportunities will be more likely to certify their reports. A higher percentage of assured reports is also a signal of corporate sophistication because assurers are likely to improve both the way companies manage sustainability related issues and the associated disclosures. Moreover, the percentage of reports that have been assured represents a proxy for the level of credibility of the reports in each country.

## **V. Research Design**

To identify the consequences of mandatory sustainability reporting laws we use panel data that extend from 1995 to 2008, or for fewer years depending on the availability of data for the various dependent variables.<sup>15</sup> To control for other correlated omitted factors that might influence the dependent variables, we control for the contemporaneous fundamental economic conditions in each country. The control variables include the natural logarithm of the Gross Domestic Product (GDP), GDP per capital<sup>16</sup>, and the unemployment rate. We also control for the quality of governmental decisions, by including a variable that measures the adaptability of government decisions to changing business conditions. Moreover, we control for the general quality of living conditions in each country by including a variable measuring life expectancy at birth. We also include the lagged value of the dependent variable, measured at the first available year and always before the enactment of the law, as an independent variable to control for

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<sup>13</sup> While not all sustainability reports are covered by GRI, we believe this is a reasonable measure of assurance practices across countries. This is because the largest corporations, which are more likely to provide an assurance statement with their report, report under the GRI principles.

<sup>14</sup> We concentrated on 2008 to measure assurance practices after the enforcement of laws. Measuring assurance practices in 2006, 2007 or 2009 makes no difference for our analysis.

<sup>15</sup> In particular, for sustainable development and ethical practices data is available for the period 2000-2008. For the remaining dependent variables the sample covers the full 1995-2008 period.

<sup>16</sup> Both measures are denominated in US \$. Redefining these two measures in a purchasing power parity basis does not affect our results.



persistent unobservable differences in the dependent variable across countries (Wooldridge, 2002). Effectively, we isolate all unobserved historical factors that influence the level of the dependent variable before the enactment of the law. Finally, we include year fixed effects to eliminate any systematic variation in the dependent variables across years. The estimated model is:

$$CountryMeasure_{it} = \alpha_t + \beta \times Reporting_{it} + \sum \gamma \times Control_{it} + \delta \times CountryMeasure_{it-\tau} + e_{it} \quad (1)$$

where  $i$  is country  $i$ ,  $t$  is year  $t$ , and  $Reporting_{it}$  takes the value of one for country-year observations in the year following the enactment of a mandatory sustainability reporting law or regulation, or otherwise is zero. A positive and significant coefficient  $\beta$  shows that mandatory sustainability reporting positively impacts the dependent variable.

## VI. Results

Table 1 presents summary statistics for all the variables that we use in our specifications. All variables are defined in Appendix 1. On average, countries score higher on prioritizing sustainable development (mean = 6.38), and the credibility of managers in society also tends to be higher (mean = 6.12) than the rest of the dependent variables. With regards to sustainable development, Singapore, Austria, and Denmark are on the top of the list, if we take the average score over all the years in the sample, whereas Venezuela, Argentina, and Italy are at the bottom. Similarly, Singapore, Finland, and Denmark, top the list for the credibility of managers in society, whereas Russia, Poland, and the Czech Republic are at the bottom.

Countries score lower, on average, on the absence of bribery and corruption (mean = 4.80) and on the perceived social responsibility of business leaders (mean = 5.58). More specifically, Venezuela, Russia, and Romania are at the bottom of the list for the absence of bribery and corruption, whereas Denmark, Finland, and New Zealand are at the top. Furthermore, when we consider the perceived social responsibility of business leaders, Russia, Romania, and Poland score the lowest, whereas Denmark, Austria, and Sweden score the highest. About 11% of the observations in the sample are effectively used as our treatment group; the *Reporting* indicator is equal to one at the corresponding firm-year

observations, starting at the year after the enactment of the disclosure law or regulation. *Assurance*, the percentage of GRI-compliant sustainability reports that are assured by a third party has a mean of 14%. Indicatively, 37.5% of the reports were assured by third parties in Finland, 35.3% in Austria, 32.5% in Italy and 29.7% in Taiwan. The list of countries with essentially no third party assurance of the reports includes countries like Indonesia, Thailand, Jordan, Venezuela and the Philippines.

The *Enforcement* indicator, which takes the value of one for countries that score above the median level of enforcement of government decisions, has a mean of 0.53 (or 53%). Singapore, Denmark, and Finland are the countries with the strongest enforcement score, whereas Venezuela, Argentina, and the Philippines are the countries with weakest law enforcement. Finally, the mean per capita GDP stands at \$19,598 and a standard deviation of \$16,971, indicating considerable variation of living standards across the 58 countries in our sample.

Table 2 shows univariate correlations for all the variables used in the analysis. The *Reporting* indicator is positively correlated with all the dependent variables of interest ((1) – (7)). As expected, the *Enforcement* variable is also positively correlated with the dependent variables, and to a lesser magnitude so is the *Assurance* variable. In addition, *per capita GDP* as well as the *Adaptability of government policy*, and *Life expectancy at birth* are positively correlated with the dependent variables of interest, indicating that countries with higher living standards or countries with governments that are more responsive in terms of enacting and implementing laws and regulations overall, are associated with higher scores on the sustainability country-level measures. The natural logarithm of *GDP*, a proxy for country size and economic development, is marginally correlated with the independent variables, and this correlation is positive or negative.

Table 3 shows the estimated coefficients of model (1), our baseline specification. Column (1) shows that the coefficient on *Reporting* is positive and significant (0.307, p-value<0.01); after mandatory sustainability reporting, the perceived social responsibility of business leaders increases. In column (2), the coefficient is positive but insignificant: we do not find a statistically reliable effect of mandatory disclosure on the prioritization of sustainable development by firms. On the other hand, the coefficient on

*Reporting* is positive and highly significant in columns (3) and (4); after mandatory sustainability reporting, employee training becomes a higher priority (0.260, p-value<0.01) and boards of directors supervise managers more effectively (0.214, p-value<0.01). In column (5), the coefficient on *Reporting* is positive and significant, suggesting that implementation of ethical practices by corporations increases (0.195, p-value<0.01) and in column (6) the coefficient on *Reporting* is positive but insignificant when the dependent variable is the absence of bribery and corruption. Column (7) shows that managerial credibility in society increases after mandatory sustainability reporting (0.207, p-value<0.01).<sup>17</sup>

In unreported results, to better understand the timing of the effect on our dependent variables, we estimate additional specifications that capture the effect of 1, 2, 3, 4, 5 or 5+ years after the enactment of the law (i.e. we introduce indicator variables to characterize the 1st, the 2nd, the 3rd and so forth year post-enactment) using the same controls as in Table 3. The findings are theoretically consistent with our argument: social responsibility and managerial credibility - what we consider as outcome variables - are affected by the law predominantly in later years as indicated by the significance of the 4-, 5-year and 5+ years post-enactment effects. On the other hand, corporate boards and ethical practices are beginning to be affected in earlier years, while sustainable development, employee training and bribery and corruption obtain more about 3 years post-enactment.

Across all specifications, the coefficients on the *Lagged dependent variable* are positive, highly significant and in the range of 0.50 to 0.75, suggesting that these country characteristics exhibit time variation but also high persistence. All else equal, countries with higher GDP score lower on *Managerial credibility*, (p-value<0.01), *Bribery and corruption* (p-value<0.01) and *Corporate boards* (p-value<0.05). *GDP per capita* enters the regressions consistently with a positive coefficient. *Adaptability of government policy* also enters all the models with a positive coefficient, as expected. *Life expectancy at birth* and the

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<sup>17</sup> These results are even stronger if we exclude from the sample of countries that have adopted laws and regulations for sustainability reporting, EU countries, such as Greece, that have transposed the Directive 2003/51/EC. The European law makes the following requirement on companies: “To the extent necessary for an understanding of the company's development, performance or position, the analysis [in the annual review] shall include both financial and, where appropriate, non-financial key performance indicators relevant to the particular business, including information relating to environmental and employee matters”, but it has been criticized for failing to change companies’ disclosure practices (Serafeim, Eccles, and Andrews, 2011).

*Unemployment rate* do not enter the models with coefficients of consistent sign. Finally, the baseline specification of Table 3 explains a considerable part of the variation in the dependent variables, ranging from 60.6% for the effectiveness of corporate boards, to 91.3% for bribery and corruption.

#### *The Role of Enforcement*

In Table 4 we introduce a new variable - the interaction between the *Reporting* indicator and the *Enforcement* indicator - to capture the marginal effect that enforcement mechanisms have on the dependent variables of interest in countries that mandate sustainability reporting. Consistent with our expectations, we find that in countries with mandatory sustainability reporting *and* strong enforcement mechanisms, perceived social responsibility of business leaders increases (0.449, p-value<0.01), the prioritization of sustainable development increases (0.455, p-value<0.01), and investments in employee training increase (1.015, p-value<0.01) by more relative to countries with low enforcement. We also find that enforcement moderates the relationship between *Reporting* and the implementation of ethical practices (0.329, p-value<0.1) as well as the relationship with bribery and corruption (0.372, p-value<0.1). The coefficient on the interaction term *Reporting\*Enforcement* is insignificant when the dependent variable is *Corporate Boards* or *Managerial Credibility*. Interestingly, in countries with low enforcement mandatory sustainability reporting has no reliable effect and the coefficient in some cases is negative. Taken together, the results of Table 4 confirm the moderating role of *Enforcement* and highlight that the positive effects that we documented in Table 3 are amplified in the presence of strong law enforcement.

#### *The Role of Assurance*

Table 5 investigates the role of assurance of sustainability reports in moderating the relationship between sustainability reporting and socially responsible management practices. To make sure that assurance has an incremental effect over and above any effect that enforcement has we also include in the specification the interaction of *Reporting* and *Enforcement*. Not including *Enforcement* in the estimation would cast doubt as to whether the coefficient on *Assurance* suffers from a correlated omitted variables problem because of *Enforcement*. We find that in countries that mandate sustainability reporting, assurance has a

positive marginal effect on our dependent variables. In particular, we find that sustainability reporting improves perceptions of social responsibility (1.091, p-value<0.1), puts emphasis on sustainable development by corporations (1.669, p-value<0.01), increases investments in human capital (1.064, p-value<0.1), and the effectiveness of corporate boards' supervision of management (0.990, p-value<0.1) more in countries where a high percentage of the reports are assured. Moreover, the coefficient on the interaction term between *Reporting* and *Assurance* is positive and significant suggesting that the perceived levels of bribery and corruption are reduced following mandatory sustainability reporting (2.270, p-value<0.01). We note that in the specifications of Table 5, we also control for the impact of enforcement; similar to Table 4, the coefficient on the interaction term between *Reporting* and *Enforcement* remains positive and highly significant for most of the columns. Our results therefore, highlight the moderating role of assurance in addition to the moderating role of enforcement.

#### *Instrumental Variables Estimation*

One concern with the analysis so far, is that *Reporting* might be correlated with the error term because we have been unable to control for time-varying country characteristics that may correlate both with *Reporting* and the dependent variables. To control for this type of endogeneity bias, we use instrumental variables developed by La Porta et al. (1998). Legal systems with European origins can be classified into four major legal families: the English common law countries, and the French, German, and Scandinavian civil law countries (Reynolds and Flores, 1996). All four legal families descend from the Roman law as compiled by Byzantine Emperor Justinian in the sixth century, and from interpretations and applications of this law in subsequent centuries. The four legal families developed distinct characteristics during the last four centuries. The English legal system is based on common law, where the laws were primarily formed by judges trying to resolve particular cases. Through colonialism, it was spread to Australia, Israel, Malaysia, New Zealand, North America, South Africa, Thailand and many African nations. The French civil code was written in 1804, following the directions of Napoleon. Through occupation, it was adopted by other European countries, such as Italy and Poland, and through its influence on the Spanish and Portuguese legal systems, the legal French tradition spread to Latin America. Through colonization, it

was adopted in many African countries, and Caribbean nations. The German civil code was completed almost in 1896, and influenced Austria, Switzerland, China, Taiwan, Czech Republic, Slovakia, and Hungary. Also, the German civil code influenced the Japanese civil code, which helped spread the German legal tradition to South Korea. In the 17th and 18th centuries, the Scandinavian countries formed their own legal codes.

There are two conditions under which the legal origin variables serve as appropriate instruments for the enactment of mandatory sustainability reporting laws and regulations. First, they have to be exogenous to socially responsible management practices during our sample period (exogeneity condition). Second, they have to be correlated with the enactment of mandatory sustainability reporting laws and regulations (relevance condition). In terms of exogeneity, the English, French, and German legal systems were spread mainly through occupation and colonialism. Thus, we take the legal origin of a country as an exogenous endowment. In terms of relevance, a body of evidence suggests that legal origin determines regulatory strategies. La Porta et al. (1998) show that the legal origin of a country influences its legal treatment of shareholders, the laws governing creditor rights, the efficiency of contract enforcement, and accounting standards. French legal origin countries tend to have weak shareholder and creditor rights, and less comprehensive company financial statements compared to countries with other legal origins.

Table 6 Panel A shows the results of the first-stage estimation. Panel B shows the results of the second-stage estimation. In Panel A, the instruments are highly relevant. The F-statistic on all instruments is in the range of 14 to 15 ( $p\text{-value} < 0.01$ ), across all specifications. In Panel B, the coefficient on the exogenous component of *Reporting* is positive and significant across all specifications, except for *Ethical Practices*. Both *Sustainable Development* and *Bribery and Corruption* are now significantly associated with *Reporting*. Exogeneity of the instruments is not rejected, suggesting that the instruments are valid. The Sargan test of over-identifying restrictions is 2.86 ( $p\text{-value} = 0.24$ ) for the specification where *Social Responsibility* is the dependent variable.

In unreported results, we use an alternative instrument, to further examine the robustness of our results. We estimate the economic cost of damages caused by natural disasters in each country between

1980 and 1999. We collect these data from the International Disaster Database provided by the Center for Research on the Epidemiology of Disasters. We expect that this is an exogenous instrument as natural disasters are exogenous events that are not related to managerial practices. Moreover, countries with more severe natural disasters might be less likely to mandate sustainability reporting because in these countries firms are more likely to engage in philanthropic activities and report on them on a voluntary basis as a response to relief efforts. As a result, in this environment, regulators might be less likely to mandate sustainability reporting. The countries with the highest damages from natural disasters are the US, Japan, China and Italy. The countries with the highest damages from natural disasters are Singapore, Finland, and Iceland. We find that the natural logarithm of the economic cost of natural disasters is related to *Reporting*. The t-statistic of the coefficient on the economic cost of natural disasters is in the range of three to four, suggesting that the instrument is relevant. Because we have one instrument we are unable to conduct an exogeneity test. However, we believe that it is reasonable to expect that natural disasters are exogenous to changes in socially responsible managerial practices. The results of the second-stage estimation show that the coefficient on *Reporting* is positive and significant across all specifications. Overall, the results of the instrumental variables specification suggest that the results are robust to alternative identification strategies.

#### *Developed vs. Developing Countries*

Table 7 offers an exploratory subsample analysis by examining the potentially differential impact that mandatory disclosure may have on developed and developing countries. Panel A of Table 7 refers to the subsample of countries that we classified as “developed” (i.e. countries whose average per-capita GDP for the sample period was above the median per capita GDP across all countries in our sample), whereas panel B presents results for developing countries (i.e. countries whose average per-capita GDP for the sample period was below the median per capita GDP). We find that for developed countries, mandatory sustainability reporting improves perceptions of social responsibility (0.377, p-value<0.01), increases investments in human capital (0.327, p-value<0.01), improves the monitoring effectiveness of corporate boards (0.286, p-value<0.01), decreases the perceived levels of bribery and corruption (0.257, p-

value<0.1), and increases managerial credibility within society (0.223, p-value<0.01). For developing countries, sustainability reporting impacts the prioritization of sustainable development by firms in the country (0.396, p-value<0.01) and the implementation of ethical practices (0.647, p-value<0.10).

Taken together, panels A and B seem to suggest that there are different mechanisms at play within developed countries that characterize the extent to which mandatory disclosure laws and regulations lead to changes in socially responsible managerial practices. For example, developed countries may be governed by a distinct set of institutions that facilitate a more effective, credible and rapid dissemination of information within society and therefore, have a larger impact. In contrast, in developing countries such institutions may be absent thus assessment of socially responsible managerial practices by society may occur less rapidly and/or require more time for verification of its real impact.

#### *Mandatory vs. Voluntary Guidelines*

Some countries have adopted a different approach towards promoting sustainability reporting. Instead of mandating disclosure of sustainability information, they have issued voluntary guidelines to assist companies with publishing sustainability reports. We collected data about voluntary guidelines and standards employing the same three stage process that we used to collect data on mandatory sustainability reporting laws and regulations. Examples of voluntary guidelines include the Guide for Preparing Sustainability Reports in Chile, the Shenzhen Stock Exchange Social Responsibility Guidelines for Listed Companies in China, the CSR Notice for financial institutions in India, and the Guidelines for the Integration of Social and Environmental Activities in the Financial Reporting of Companies in New Zealand.<sup>18</sup> In unreported results, we reproduced the basic specifications of Table 3 and included an additional variable, *Voluntary Reporting*, to control for the impact of voluntary sustainability reporting guidelines or standards. The coefficients on *Reporting* remain virtually unchanged and the coefficient on *Voluntary Reporting* is positive and significant for some of the dependent variables. All else equal, voluntary sustainability reporting increases the perceived social responsibility of business leaders,

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<sup>18</sup> Twelve countries have adopted throughout our sample period voluntary guidelines for sustainability reporting.



increases investments in employee training and, improves the monitoring effectiveness of corporate boards.

### *Specialized Laws and Regulations*

During the period covered by the sample, some countries<sup>19</sup> adopted laws and regulations that pertained to specific ESG issues or specific industries. For example, the Canadian Environmental Protection Act of 1999 required firms to report on specific pollutant emissions; in Denmark, the Green Accounts Act of 1995 required certain listed firms to draw up green accounts and to include a statement from the authorities; in the US, the Sarbanes-Oxley Act of 2002 imposed a number of new reporting requirements for listed firms around corporate governance. These laws and regulations were also identified with the same three stage process that we implemented for mandatory sustainability reporting laws and regulations. To control for the impact that such specialized laws and regulations may have on our dependent variables of interest, we constructed an indicator variable that for each country, takes the value of one for all the years after the year of enactment of such laws and regulations. In unreported results, we again reproduced the specifications of Table 3 with this control variable and we found that the coefficients on *Reporting* remain unchanged with the exception of the specification for *Sustainable Development*, where it becomes significant at the 10% level. The coefficient on the indicator variable for specialized laws and regulations is insignificant across almost all specifications indicating that the main impact on the dependent variables originates from the broader sustainability reporting laws and regulations, rather than these specialized ones.

### *Firm-level Analysis*

The evidence so far suggests that sustainability reporting has an effect on managerial practices. However, there are a number of alternative explanations for the results we documented. For example, it seems likely that simply the act of having to measure and disclose sustainability measures could affect reported perceptions of how effectively the firm was handling these issues. Moreover, if mandatory disclosure is part of a concerted effort by governments to improve sustainability then improvements in other aspects of

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<sup>19</sup> In total, fourteen countries in our sample adopted such specialized laws and regulations.

the regulatory environment will be correlated with mandatory reporting, lessening the ability to tie the results to mandatory reporting.

To control for these alternative explanations we use firm-level data that are not based on managerial perceptions but on actual firm ESG performance. The use of firm-level data allows us to perform a differences-in-differences analysis by constructing groups that should be affected by mandatory reporting and firms in the same country that should be affected by relatively less. The firm-level data were provided to us by Thomson Reuters ASSET4, one of the main providers of ESG data to investment firms. ASSET4 provides data on the ESG performance of large corporations around the world since 2002 and it has expanded its coverage over the years to include more than 3,000 companies. This dataset provides us with measures of sustainable development (energy used, waste and water consumption), employee training (training hours and training costs), and corporate governance (attendance of board meetings).

To construct a control group that would be affected relatively less, if at all, by the reporting regulation, we identify firms that voluntarily disclosed before the regulation their sustainability performance. For example, when we test for the effect of mandatory reporting on employee training for French companies we identify French companies that disclosed training hours for their employees before 2003 (see Appendix 2 for the regulation). We assume that these companies' employee training practices will be less affected by the regulation because they already disclose the hours their employees spend training. This is the control group and we label it "Disclosure". Next, we identify French firms that started disclosing training hours in 2003. We assume that these firms were compelled to disclose as a result of the new regulation. This is the treatment group and we label it "New Disclosure". We hypothesize that firms in the New Disclosure group will increase investments in employee training in the future after the enactment of the law. To control for inter-temporal changes in employee training that are influenced by other unrelated factors, we calculate the change in training hours per employee also for the Disclosure group. The change in training hours for the New Disclosure group minus the change in training hours for the Disclosure group is the differences-in-differences estimate. If year  $t$  is the first year of mandatory reporting we estimate the effect in year  $t+2$  to allow enough time for reporting to change managerial

practices. Ideally, we would estimate the effect in later years but our data do not allow us to move beyond year  $t+2$  because the sample decreases significantly.

Table 8 shows the results of the analysis. We present average firm performance across the sustainability metrics for the two groups of firms at year  $t$  and at year  $t+2$ . Moreover, we calculate the differences-in-differences estimate and the statistical significance for each measure. Panels A-C present estimates for measures of sustainable development. Energy use, waste generation, and water consumption all decline relatively more for the New Disclosure group, consistent with mandatory reporting incentivizing managers to improve their firms' environmental performance. Training hours and costs per employee increase relatively more for the New Disclosure group suggesting that mandatory reporting affects investments in employees (Panels D and E). Although board attendance increases more for the New Disclosure group this result is insignificant (Panel F). In summary, these results are consistent with the country-level analysis.

## **VII. Discussion**

In this paper, we have provided evidence for the positive impact of mandatory sustainability reporting on socially responsible management practices. In particular, we show that mandatory disclosure of sustainability information leads to a) an increase in the social responsibility of business leaders, b) a prioritization of sustainable development, c) a prioritization of employee training, d) more efficient supervision of managers by boards of directors, e) an increase in the implementation of ethical practices by firms, e) a decrease in bribery and corruption, and f) an improvement of managerial credibility within society. We also find that these effects are larger for countries that have stronger enforcement mechanisms and countries where assurance of sustainability data is more frequent.

We note a number of caveats that could potentially affect our results. First, the laws and regulations that we include in our analysis are likely to have smaller effects compared to the possible effects of laws and regulations that institute more specific requirements across all companies or laws that mandate integrated reporting. Such laws and regulations are more likely to expand sustainability reporting considerably and, in the case of integrated reporting, force companies to embed sustainability in their

strategy and operations (Eccles and Krzus, 2010). Moreover, laws and regulations that mandate sustainability reporting are likely to generate effects that take a number of years to materialize, making it more difficult for researchers to detect these effects. If this is the case, then the results of this paper underestimate the effects of sustainability reporting.

Another concern relates to the nature of most of our dependent variables, which are perceptions of managerial practices rather than variables generated from hard data; the concern here is that reporting might impact perceptions without necessarily changing the underlying reality. However, we believe this is unlikely for several reasons. First, positive effects on the dependent variables of interest are likely to be transient and non-systematic if expectations about socially responsible management practices are not eventually met by corporate actions. Should such information turn out to be invalid, then perceptions will adjust. In our sample we have data that, on average, extend for five years after the adoption of mandatory sustainability reporting, allowing for these reversals to happen. In addition, the emergence of third parties who check and certify sustainability reports (Simnett, Vanstraelen and Chua, 2009), signals the increasing legitimacy and credibility of communicating ESG information to stakeholders. This kind of assurance and external validation of sustainability disclosures makes us more confident that the dependent variables characterize real firm actions as opposed to symbolic management (e.g. Westphal and Zajac, 1994, 1998). Importantly, to further alleviate this concern, we analyze firm-level data that do not represent managerial perceptions and we find consistent results.

The findings reported in this paper suggest that sustainability reporting not only increases transparency but can also change corporate behavior. Disclosure of ESG information forces companies to manage these matters effectively in order to avoid having to disclose bad ESG performance to their multiple stakeholders. An implication for regulators is that if they want companies to perform better on ESG metrics then reporting could be a useful means to achieve this objective. An implication for companies is that reporting could change the way they conduct business. If better ESG performance provides a competitive advantage and leads to better long-term financial performance (Eccles et al., 2012), then reporting could enhance the economic value produced by a firm.



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Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min	Max
Social Responsibility	5.58	1.07	2.53	7.87
Sustainable Development	6.38	1.09	3.06	9.07
Employee Training	5.78	1.06	2.95	8.22
Corporate Boards	5.74	0.93	3.07	8.15
Ethical Practices	6.02	1.29	3.09	8.32
Bribery & corruption	4.80	2.67	0.34	9.65
Managerial Credibility	6.12	1.00	2.48	8.33
Reporting	0.11	0.31	0	1
Enforcement	0.53	0.50	0	1
Assurance	0.14	0.17	0	1
Log of total GDP	5.52	1.40	1.82	9.57
GDP per capita	19,598	16,971	374	11,9741
Life expectancy at birth	75.19	5.45	48.00	83.00
Adaptability of government policy	4.81	1.44	0.80	9.25
Unemployment rate	7.53	4.67	0.90	31.35

All variables are defined in Appendix 1.

Table 2: Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Social Responsibility	1													
(2) Sustainable Development	0.76	1												
(3) Employee Training	0.82	0.79	1											
(4) Corporate Boards	0.73	0.63	0.61	1										
(5) Ethical Practices	0.88	0.74	0.79	0.77	1									
(6) Bribery and Corruption	0.75	0.72	0.72	0.66	0.87	1								
(7) Managerial Credibility	0.80	0.66	0.68	0.80	0.80	0.69	1							
(8) Reporting	0.36	0.27	0.35	0.28	0.43	0.42	0.27	1						
(9) Enforcement	0.60	0.58	0.51	0.57	0.65	0.67	0.59	0.31	1					
(10) Assurance	0.06	0.06	0.05	0.09	0.12	0.10	0.11	0.14	-0.03	1				
(11) Log of total GDP	0.03	-0.02	0.06	-0.08	0.14	0.02	-0.04	0.20	-0.02	0.13	1			
(12) GDP per capita	0.52	0.41	0.55	0.35	0.62	0.71	0.45	0.43	0.43	0.16	0.17	1		
(13) Life expectancy at birth	0.30	0.27	0.31	0.19	0.44	0.61	0.30	0.28	0.34	0.13	0.16	0.63	1	
(14) Adaptability of government policy	0.52	0.65	0.47	0.58	0.49	0.50	0.60	0.09	0.54	0.07	-0.19	0.20	0.07	1
(15) Unemployment rate	-0.31	-0.38	-0.37	-0.26	-0.34	-0.41	-0.31	-0.14	-0.31	-0.21	-0.13	-0.41	-0.54	-0.27

All variables are defined in Appendix 1.

Table 3: Effect of Mandatory Sustainability Reporting

Dependent Variable:	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & corruption	Managerial Credibility
<b>Reporting</b>	<b>0.307***</b> <b>(0.079)</b>	<b>0.105</b> <b>(0.091)</b>	<b>0.260***</b> <b>(0.088)</b>	<b>0.214***</b> <b>(0.070)</b>	<b>0.195***</b> <b>(0.066)</b>	<b>0.143</b> <b>(0.128)</b>	<b>0.207***</b> <b>(0.072)</b>
Lagged dependent variable	0.718*** (0.030)	0.484*** (0.046)	0.633*** (0.026)	0.522*** (0.031)	0.751*** (0.032)	0.698*** (0.021)	0.509*** (0.027)
Log of total GDP	0.018 (0.017)	-0.035 (0.023)	-0.004 (0.016)	-0.039** (0.016)	-0.003 (0.017)	-0.081*** (0.021)	-0.044*** (0.016)
GDP per capita	0.009*** (0.002)	0.005* (0.003)	0.020*** (0.002)	0.005*** (0.002)	0.005** (0.003)	0.027*** (0.004)	0.012*** (0.002)
Life expectancy at birth	-0.012* (0.007)	-0.011 (0.007)	-0.035*** (0.006)	0.000 (0.005)	0.022*** (0.006)	0.054*** (0.009)	0.004 (0.005)
Adaptability of government policy	0.196*** (0.019)	0.238*** (0.028)	0.151*** (0.017)	0.202*** (0.020)	0.159*** (0.023)	0.234*** (0.029)	0.200*** (0.018)
Unemployment rate	-0.003 (0.006)	-0.032*** (0.008)	-0.010* (0.005)	0.002 (0.006)	0.006 (0.007)	0.014* (0.008)	0.003 (0.005)
Constant	1.146** (0.477)	3.387*** (0.648)	3.627*** (0.493)	1.850*** (0.461)	-1.088** (0.525)	-3.612*** (0.775)	1.730*** (0.442)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	689	464	688	689	464	689	689
R-squared	71.7%	67.5%	71.8%	60.6%	84.0%	91.3%	70.2%

OLS regressions. Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4: Moderating Role of Enforcement

Dependent Variable	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & corruption	Managerial Credibility
Reporting	-0.145 (0.158)	-0.305 (0.203)	-0.664*** (0.170)	0.204 (0.163)	-0.101 (0.157)	-0.251 (0.203)	0.054 (0.117)
<b>Reporting * Enforcement</b>	<b>0.449*** (0.173)</b>	<b>0.455** (0.212)</b>	<b>1.015*** (0.186)</b>	<b>-0.046 (0.175)</b>	<b>0.329* (0.171)</b>	<b>0.372* (0.224)</b>	<b>0.142 (0.141)</b>
Lagged dependent variable	0.658*** (0.031)	0.453*** (0.048)	0.610*** (0.026)	0.466*** (0.033)	0.724*** (0.034)	0.658*** (0.021)	0.484*** (0.028)
Enforcement	0.345*** (0.058)	0.125 (0.079)	0.133** (0.055)	0.323*** (0.058)	0.108 (0.073)	0.595*** (0.086)	0.147*** (0.055)
Log of total GDP	0.020 (0.017)	-0.031 (0.023)	0.000 (0.015)	-0.035** (0.016)	0.002 (0.018)	-0.078*** (0.020)	-0.041** (0.016)
GDP per capita	0.008*** (0.002)	0.004* (0.003)	0.019*** (0.002)	0.004** (0.002)	0.005** (0.003)	0.025*** (0.004)	0.011*** (0.002)
Life expectancy at birth	-0.015** (0.007)	-0.011 (0.007)	-0.035*** (0.006)	-0.003 (0.005)	0.021*** (0.006)	0.052*** (0.009)	0.003 (0.005)
Adaptability of government policy	0.151*** (0.020)	0.225*** (0.030)	0.130*** (0.018)	0.170*** (0.021)	0.146*** (0.024)	0.169*** (0.027)	0.186*** (0.018)
Unemployment rate	-0.002 (0.006)	-0.032*** (0.008)	-0.010* (0.005)	0.004 (0.006)	0.007 (0.007)	0.016** (0.008)	0.003 (0.005)
Constant	1.765*** (0.494)	3.625*** (0.683)	3.782*** (0.498)	2.373*** (0.476)	-0.866 (0.537)	-3.247*** (0.717)	1.975*** (0.456)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	689	464	688	689	464	689	689
R-squared	73.5%	68.0%	73.0%	62.3%	84.2%	92.1%	70.6%

OLS regressions. Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Moderating Role of Assurance

Dependent Variable	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & corruption	Managerial Credibility
Reporting	-0.378* (0.219)	-0.617** (0.272)	-0.890*** (0.249)	-0.014 (0.222)	-0.020 (0.183)	-0.693** (0.330)	-0.031 (0.180)
<b>Reporting * Assurance</b>	<b>1.091*</b> <b>(0.607)</b>	<b>1.669**</b> <b>(0.650)</b>	<b>1.064*</b> <b>(0.645)</b>	<b>0.990*</b> <b>(0.577)</b>	<b>-0.395</b> <b>(0.478)</b>	<b>2.270**</b> <b>(0.996)</b>	<b>0.369</b> <b>(0.659)</b>
Assurance	0.061 (0.096)	-0.658*** (0.184)	-0.031 (0.104)	0.151 (0.096)	0.038 (0.123)	-0.700*** (0.267)	0.121 (0.097)
Reporting * Enforcement	0.460** (0.205)	0.479* (0.244)	1.031*** (0.216)	-0.036 (0.215)	0.321** (0.163)	0.400 (0.263)	0.145 (0.146)
Enforcement	0.353*** (0.058)	0.078 (0.082)	0.137** (0.055)	0.340*** (0.058)	0.107 (0.073)	0.549*** (0.092)	0.158*** (0.055)
Lagged dependent variable	0.661*** (0.032)	0.463*** (0.048)	0.605*** (0.026)	0.463*** (0.033)	0.726*** (0.034)	0.665*** (0.022)	0.482*** (0.028)
Log of total GDP	0.023 (0.017)	-0.016 (0.024)	0.005 (0.015)	-0.032** (0.016)	-0.001 (0.018)	-0.063*** (0.021)	-0.041** (0.016)
GDP per capita	0.008*** (0.002)	0.005* (0.003)	0.019*** (0.002)	0.004** (0.002)	0.005* (0.003)	0.025*** (0.003)	0.011*** (0.002)
Life expectancy at birth	-0.015** (0.007)	-0.012 (0.007)	-0.035*** (0.006)	-0.003 (0.005)	0.021*** (0.006)	0.052*** (0.009)	0.002 (0.005)
Adaptability of government policy	0.147*** (0.020)	0.227*** (0.030)	0.129*** (0.018)	0.165*** (0.021)	0.147*** (0.024)	0.172*** (0.027)	0.184*** (0.018)
Unemployment rate	-0.002 (0.006)	-0.036*** (0.008)	-0.010** (0.005)	0.004 (0.006)	0.007 (0.007)	0.013* (0.008)	0.003 (0.005)
Constant	1.754*** (0.493)	3.646*** (0.692)	3.789*** (0.498)	2.386*** (0.475)	-0.873 (0.539)	-3.235*** (0.724)	1.988*** (0.455)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	689	464	688	689	464	689	689
R-squared	73.7%	69.0%	73.2%	62.6%	84.2%	92.3%	70.6%

Table 6: Instrumental Variables Estimation

## Panel A: First-stage estimates

Dependent Variable	Reporting	Reporting	Reporting	Reporting	Reporting	Reporting	Reporting
<b>Legal origin UK</b>	<b>-0.331***</b> (0.059)	<b>-0.420***</b> (0.073)	<b>-0.332***</b> (0.059)	<b>-0.339***</b> (0.060)	<b>-0.436***</b> (0.074)	<b>-0.320***</b> (0.059)	<b>-0.338***</b> (0.059)
<b>Legal origin French</b>	<b>-0.299***</b> (0.060)	<b>-0.377***</b> (0.078)	<b>-0.306***</b> (0.060)	<b>-0.307***</b> (0.060)	<b>-0.391***</b> (0.078)	<b>-0.217***</b> (0.066)	<b>-0.317***</b> (0.061)
<b>Legal origin Germany</b>	<b>-0.364***</b> (0.058)	<b>-0.455***</b> (0.076)	<b>-0.371***</b> (0.059)	<b>-0.355***</b> (0.058)	<b>-0.432***</b> (0.079)	<b>-0.286***</b> (0.062)	<b>-0.369***</b> (0.059)
Lagged dependent variable§	0.032*** (0.012)	0.071*** (0.017)	0.021* (0.012)	0.017 (0.011)	0.064*** (0.017)	0.029*** (0.008)	-0.012 (0.008)
Log of total GDP	0.044*** (0.007)	0.048*** (0.009)	0.042*** (0.007)	0.044*** (0.007)	0.047*** (0.010)	0.044*** (0.007)	0.045*** (0.008)
GDP per capita	0.002** (0.001)	0.002* (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.001 (0.001)	0.002* (0.001)	0.003*** (0.001)
Life expectancy at birth	0.002 (0.002)	0.005* (0.003)	0.001 (0.002)	0.001 (0.002)	0.006** (0.003)	-0.003 (0.002)	0.002 (0.002)
Adaptability of government policy	0.020** (0.008)	0.003 (0.012)	0.020** (0.008)	0.020** (0.009)	0.008 (0.012)	0.016* (0.008)	0.026*** (0.009)
Unemployment rate	0.003** (0.002)	0.009*** (0.003)	0.004** (0.002)	0.003** (0.002)	0.009*** (0.003)	0.003* (0.002)	0.003** (0.002)
Constant	-0.405** (0.197)	-0.820*** (0.266)	-0.340* (0.189)	-0.329* (0.186)	-0.782*** (0.267)	-0.072 (0.183)	-0.259 (0.181)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	675	455	674	675	455	675	675
R-squared	0.312	0.359	0.31	0.309	0.356	0.322	0.308

OLS regressions. Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

§ Each column corresponds to the lagged value of the seven (7) dependent variables of interest that we use in the second stage regression.

Panel B: Second-stage estimates

Dependent Variable	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & Corruption	Managerial Credibility
<b>Reporting</b>	<b>2.191***</b> (0.382)	<b>0.594**</b> (0.234)	<b>1.742***</b> (0.335)	<b>1.413***</b> (0.308)	<b>0.237</b> (0.192)	<b>1.744***</b> (0.446)	<b>1.196***</b> (0.261)
Lagged dependent variable	0.667*** (0.041)	0.424*** (0.051)	0.615*** (0.031)	0.505*** (0.033)	0.750*** (0.034)	0.647*** (0.029)	0.507*** (0.028)
Log of total GDP	-0.019 (0.025)	-0.057** (0.023)	-0.037 (0.023)	-0.056*** (0.019)	-0.005 (0.016)	-0.129*** (0.026)	-0.062*** (0.019)
GDP per capita	-0.001 (0.003)	0.002 (0.002)	0.011*** (0.002)	-0.001 (0.002)	0.005* (0.003)	0.020*** (0.005)	0.006** (0.002)
Life expectancy at birth	-0.014 (0.008)	-0.010 (0.007)	-0.036*** (0.007)	-0.002 (0.006)	0.022*** (0.006)	0.061*** (0.011)	0.002 (0.005)
Adaptability of government policy	0.193*** (0.025)	0.218*** (0.029)	0.131*** (0.023)	0.213*** (0.022)	0.158*** (0.025)	0.214*** (0.033)	0.199*** (0.021)
Unemployment rate	-0.012* (0.007)	-0.034*** (0.008)	-0.017*** (0.006)	-0.004 (0.006)	0.006 (0.007)	0.009 (0.009)	-0.002 (0.005)
Constant	1.999*** (0.672)	4.007*** (0.686)	4.265*** (0.582)	2.305*** (0.551)	-1.093** (0.513)	-3.381*** (0.885)	2.106*** (0.505)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	675	455	674	675	455	675	675
R-squared	0.491	0.621	0.563	0.497	0.841	0.884	0.628

Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7: Developed vs. Developing Countries

## Panel A: Developed Countries

Dependent Variable	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & corruption	Managerial Credibility
<b>Reporting</b>	<b>0.377***</b> <b>(0.074)</b>	<b>0.101</b> <b>(0.086)</b>	<b>0.327***</b> <b>(0.085)</b>	<b>0.286***</b> <b>(0.063)</b>	<b>0.074</b> <b>(0.058)</b>	<b>0.257*</b> <b>(0.141)</b>	<b>0.223***</b> <b>(0.069)</b>
Lagged dependent variable	0.720*** (0.045)	0.606*** (0.051)	0.794*** (0.036)	0.631*** (0.043)	0.921*** (0.038)	0.654*** (0.027)	0.518*** (0.035)
Log of total GDP	-0.061*** (0.017)	-0.071*** (0.026)	-0.078*** (0.023)	-0.078*** (0.017)	0.014 (0.017)	-0.121*** (0.024)	-0.070*** (0.015)
GDP per capita	0.009*** (0.002)	-0.001 (0.002)	0.019*** (0.003)	0.005** (0.002)	-0.003 (0.002)	0.023*** (0.005)	0.010*** (0.002)
Life expectancy at birth	0.031 (0.022)	0.092*** (0.029)	-0.036 (0.026)	0.016 (0.022)	0.075*** (0.017)	0.060** (0.029)	0.002 (0.017)
Adaptability of government policy	0.167*** (0.022)	0.061** (0.031)	0.115*** (0.025)	0.192*** (0.024)	0.032 (0.024)	0.221*** (0.038)	0.193*** (0.020)
Unemployment rate	-0.004 (0.009)	-0.069*** (0.018)	0.009 (0.011)	0.023** (0.010)	-0.020 (0.013)	0.052*** (0.019)	0.017* (0.009)
Constant	-1.450 (1.694)	-5.715** (2.517)	3.284* (1.987)	0.179 (1.686)	-5.777*** (1.452)	-3.610 (2.229)	1.998 (1.292)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	387	253	387	387	253	387	387
R-squared	71.5%	69.7%	72.7%	68.0%	85.0%	81.4%	69.2%

OLS regressions. Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Panel B: Developing Countries

Dependent Variable	Social Responsibility	Sustainable Development	Employee Training	Corporate Boards	Ethical Practices	Bribery & corruption	Managerial Credibility
<b>Reporting</b>	<b>0.022</b> <b>(0.682)</b>	<b>0.396**</b> <b>(0.159)</b>	<b>0.215</b> <b>(0.506)</b>	<b>0.332</b> <b>(0.328)</b>	<b>0.647*</b> <b>(0.340)</b>	<b>-0.102</b> <b>(0.231)</b>	<b>-0.101</b> <b>(0.257)</b>
Lagged dependent variable	0.699*** (0.045)	0.282*** (0.062)	0.409*** (0.043)	0.440*** (0.045)	0.626*** (0.049)	0.685*** (0.036)	0.483*** (0.039)
Logged total GDP	0.168*** (0.032)	-0.065* (0.033)	0.015 (0.028)	-0.015 (0.031)	-0.087** (0.035)	-0.185*** (0.033)	-0.037 (0.042)
GDP per capita	-0.025** (0.011)	0.041*** (0.012)	0.042*** (0.010)	-0.030** (0.012)	0.031*** (0.012)	0.036*** (0.012)	-0.010 (0.013)
Life expectancy at birth	-0.001 (0.011)	-0.038*** (0.009)	-0.043*** (0.007)	-0.010 (0.008)	-0.008 (0.008)	-0.005 (0.008)	-0.006 (0.009)
Adaptability of government policy	0.223*** (0.034)	0.425*** (0.039)	0.222*** (0.025)	0.173*** (0.031)	0.264*** (0.037)	0.262*** (0.030)	0.207*** (0.034)
Unemployment rate	0.013* (0.007)	-0.030*** (0.009)	-0.013** (0.006)	-0.000 (0.008)	0.005 (0.008)	-0.017** (0.007)	-0.001 (0.006)
Constant	-0.539 (0.813)	5.425*** (0.842)	4.643*** (0.648)	2.994*** (0.707)	1.513** (0.763)	0.944 (0.690)	2.524*** (0.842)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	302	211	301	302	211	302	302
R-squared	58.7%	66.0%	62.0%	51.3%	67.6%	82.9%	61.2%

OLS regressions. Standard errors are robust to heteroscedasticity. All variables are defined in Appendix 1.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8: Firm-level Analysis

Panel A: Energy / Sales

Groups	N	Before	After	Diffs-in-diffs
Disclosure	58	5.98	6.07	
New Disclosure	16	5.13	5.08	<b>-0.14</b>
p-value				<b>0.048</b>

Panel B: Waste / Sales

Groups	N	Before	After	Diffs-in-diffs
Disclosure	54	1.84	1.86	
New Disclosure	16	1.69	1.58	<b>-0.13</b>
p-value				<b>0.028</b>

Panel C: Water / Sales

Groups	N	Before	After	Diffs-in-diffs
Disclosure	62	5.73	5.77	
New Disclosure	21	5.38	5.23	<b>-0.19</b>
p-value				<b>0.047</b>

Panel D: Training Hours / Employees

Groups	N	Before	After	Diffs-in-diffs
Disclosure	42	31.63	30.92	
New Disclosure	26	21.60	25.48	<b>4.59</b>
p-value				<b>0.015</b>

Panel E: Training Costs / Employees

Groups	N	Before	After	Diffs-in-diffs
Disclosure	20	6.83	6.66	
New Disclosure	9	6.76	7.59	<b>1.00</b>
p-value				<b>0.023</b>

Panel F: Board Attendance

Groups	N	Before	After	Diffs-in-diffs
Disclosure	175	91.30	91.36	
New Disclosure	57	90.09	92.16	<b>2.01</b>
p-value				<b>0.123</b>

“Before” is the first year (t) of mandatory sustainability reporting in a country. “After” is two years after (t+2) the first year of mandatory sustainability reporting. “Disclosure” includes firms that disclosed the focal measure before mandatory sustainability reporting. “New Disclosure” includes firms that did not disclose the focal measure before mandatory sustainability reporting. p-values are based on one-tailed tests. Variables in Panels A-E are log-transformed to mitigate the influence of extreme values. N is the number of unique firms in each portfolio.

## APPENDIX 1

### Definitions of Variables

Variable	Variable Definition
Social Responsibility	Social responsibility of business leaders is high (IMD WCY executive survey based on an index from 0 to 10)
Sustainable Development	Sustainable development is a priority in companies. (IMD WCY executive survey based on an index from 0 to 10)
Employee Training	Employee training is a high priority in companies (IMD WCY executive survey based on an index from 0 to 10)
Corporate Boards	Corporate boards do supervise the management of companies effectively. (IMD WCY executive survey based on an index from 0 to 10)
Ethical Practices	Ethical practices are implemented in companies. (IMD WCY executive survey based on an index from 0 to 10)
Bribery & corruption	Bribing and corruption do not exist (IMD WCY executive survey based on an index from 0 to 10)
Managerial Credibility	Credibility of managers in society is strong (IMD WCY executive survey based on an index from 0 to 10)
Reporting	Takes the value of one for country-years after the enforcement of a law that mandates sustainability reporting. Otherwise it takes the value of zero.
Enforcement	Takes the value of one for country-years that score above median in the question “Are government decisions effectively implemented?” Otherwise it takes the value of zero.
Assurance	Percentage of companies that provide third party assurance of their GRI compliant sustainability report.
Life expectancy at birth	The average estimate for life expectancy at birth.
Adaptability of government policy	Adaptability of government policy to changes in the economy is high. (IMD WCY executive survey based on an index from 0 to 10)
Unemployment rate	Percentage of the labor force that is unemployed.

APPENDIX 2

List of Mandatory and Voluntary Sustainability Reporting Guidelines between 1995 and 2008

Country	Name of law/regulation	Note for law/regulation	ESG type	Voluntary=1 Mandatory=2	Year
Australia	Corporations Act - Section 299(1)(f)	Subsection of business law	env	2	1998
Australia	National Greenhouse and Energy Reporting Act	Stock exchange regulations	env	2	2007
Australia	Financial Services Reform Act	Only financial institutions	esg	2	2001
Austria	Amended Austrian Commercial Code (UGB), §243 Austrian Commercial Code (UGB), §243	Subsection of business law / transposition of EU law	esg	2	2005
Belgium	Social Balance Sheet	Subsection of business law	soc	2	2003
Brazil	Ethos Indicators on Corporate Social Responsibility	Evaluation System	esg	1	2001
Canada	The Canadian Environmental Protection Act,	Environmental law	env	2	1999
Canada	The Bank Act - Section 459.3(1)	Only financial institutions	esg	2	2001
Canada	Securities Commission (disclosure obligations of)	Stock exchange regulations	esg	2	2004
Chile	Voluntary standards Guide for Preparing Sustainability Reports	CSR Guidelines	esg	1	2003
Chile	The economic dimension - social sustainability reports: towards basic quarterly financial statements	CSR Reporting Model	esg	1	2006
China	Environmental Information Disclosure Act	Environmental law	env	2	2008
China	Guidelines on Environmental Information Disclosure by Companies Listed on the Shanghai Stock Exchange	Stock exchange regulations	env	2	2008
China	Shenzhen Stock Exchange Social Responsibility Guidelines for Listed Companies		esg	1	2006
China	Directive. "CSR Guideline for State-Owned Enterprises"	Decree	esg	2	2008
Denmark	Green Accounts Act	CSR-dedicated law	env	2	1995
Denmark	Social Index, 2000	Tool	esg	1	2000

Denmark	Danish Financial Statements Act	Subsection of business law	esg	2	2001
Denmark	Revision to Danish Financial Statements Act (The Social Responsibility for Large Businesses Law)	Subsection of business law	esg	2	2009
Finland	revised disclosure obligations in the Accounting Act	Revision to Accounting standard	env	2	2006
Finland	revised disclosure obligations in the Accounting Act	Revision to Accounting standard	gov	2	2006
Finland	Finnish Accounting Act	Subsection of Accounting standard	esg	2	1997
France	ADEME Carbon Footprint methodology	Guidelines	env	2	2002
France	NRE (Loi n°2001-420 sur les Nouvelles Régulations Economiques)	Subsection of business law	esg	2	2003
Germany	Bilanzrechtsreformgesetz (BilReG)	Subsection of Accounting standard	esg	2	2005
Greece	Law 3487	Transposition of EU law	esg	2	2006
India	SEBI committee on Corp. Gove.	Governance	esg	1	2003
India	CSR Notice	Only financial institutions	esg	1	2007
Indonesia	Capital Markets Regulation No. X.K.6.	Stock exchange regulations	esg	2	2007
Indonesia	Law No. 40/2007 Concerning Limited Liability Company Law	Subsection of business law	esg	2	2007
Ireland	Credit Institutions Act	Only financial institutions	esg	2	2008
Italy	Legislative decree no. 32/2007	Decree	esg	2	2007
Japan	ELV Recycling Law	Only automobile industry	env	2	2002
Japan	Law Concerning the Promotion of Business Activities with Environmental Consideration	Environmental law	env	2	2005
Japan	Environmental Reporting Guidelines	Guidelines	env	2	2007
Luxembourg	The Ten Principles of Corporate Governance issued by the Luxembourg Stock Exchange	stock exchange regulations	gov	1	2006
Malaysia	N/A (CSR-related law)	Decree	esg	2	2007
Netherlands	Guidelines for the integration of social and environmental activities in the financial reporting of companies		esg	1	2008
Netherlands	Dutch Corporate Governance Code	Best practices	esg	1	2003

Netherlands	Dutch Civil Code (1838 Section 2, Part 9, Article 2:391 subsection 1)	Transposition of EU law	esg	2	2004
Netherlands	The Environmental Protection Act	Environmental law	esg	2	1999
New Zealand	Guidelines		esg	1	2003
Norway	Norwegian Code of Practice for Corporate Governance	Code	gov	1	2007
Norway	Accounting Act § 3-3 (Regnskapsloven)	Subsection of accounting standard	esg	2	1998
Portugal	The 29th Accounting Standard	Subsection of accounting standard	env	2	2004
Portugal	Sustainability Report	Limited to Transp & Comm	esg	2	2006
Singapore	Code of Corporate Governance	All publicly listed companies	gov	2	2007
South Africa	Companies act	Subsection of business law	gov	2	2008
South Africa	JSE Socially Responsible Investment (SRI) index	Stock exchange regulations	esg	1	2004
South Africa	Second King Report on Corporate Governance	Subsection of business law	gov	1	2003
Spain	Resolución de 25 de marzo de 2002 (Insitituto de Contabilidad y Auditoría de Cuentas)	Subsection of Accounting standard	env	2	2002
Sweden	Guidelines on Environmental Information in the director's report section	Guidelines	env	1	1998
Sweden	Amendment to the Annual Accounts Act	Subsection of Accounting standard	esg	2	2005
United Kingdom	Combined Code	Subsection of Accounting standard	gov	2	2003
United Kingdom	Environmental Reporting Guidelines	Guidelines	env	1	2006
United Kingdom	Companies Act	Subsection of business law	esg	2	2006
USA	The Sarbanes-Oxley Act	Subsection(s) of Business Law	gov	2	2002